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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,884	07/20/2005	Gregory P. Carman	58086-223840	8378
26694	7590	04/11/2007		
VENABLE LLP P.O. BOX 34385 WASHINGTON, DC 20043-9998			EXAMINER FERGUSON, MICHAEL P	
			ART UNIT	PAPER NUMBER
			3679	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/11/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/542,884

Applicant(s)

CARMAN ET AL.

Examiner

Michael P. Ferguson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 and 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____.                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____.  | 6) <input type="checkbox"/> Other: ____.                          |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

### ***Claim Objections***

2. Claims 1, 10 and 20 are objected to because of the following informalities:

Claim 1 (line 1) recites "said apparatus". It should recite --said system--.

Claim 10 (line 19) recites "contacting said indenter surface". It should recite --providing an engagement mechanism for contacting said indenter surface--.

Claim 20 (line 2) recites "claim 12". It should recite --claim 10--.

For the purpose of examining the application, it is assumed that appropriate correction has been made.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-5, 7-15, 17, 18 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Lortz et al. (US 5,722,709).

As to claim 1, Lortz et al. disclose a system for releasable engagement of two bodies, the system comprising:

a first body **14,16** comprising an engagement surface, the engagement surface comprising a pseudo-elastic material, the pseudo-elastic material being at an operating temperature, the operating temperature being above the martensite-austenite transition temperature for the pseudo-elastic material, the pseudo-elastic material being capable of conversion between an austenite state and a martensite state by application of stress to the first body at the engagement surface, the application of stress to the engagement surface thereby converting the first body from an unloaded body to a loaded body wherein the engagement surface of the unloaded body has an unstressed shape and the engagement surface of the loaded body has a stressed shape wherein the stressed shape is different from the unstressed shape;

a second body **17** comprising an indenter surface for contacting the engagement surface of the first body, the indenter surface being formed by one or more teeth that extend from the second body for engagement with the first body, the second body comprising a material that is harder than the pseudo-elastic material in the martensite state; and

an engagement mechanism **20,21** that provides reversible contact of the indenter surface with the engagement surface and provides for the application of sufficient stress to the engagement surface to provide reversible conversion of the engagement surface

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from the unstressed shape to the stressed shape wherein the stressed shape conforms to the shape of the indenter teeth (Figures 1-5, column 4 lines 17-32).

As to claim 2, Lortz et al. disclose a system wherein the operating temperature is within 40°C above the martensite-austemite transition temperature (column 3 lines 31-36).

As to claim 3, Lortz et al. disclose a system wherein the operating temperature is between room temperature and 300°C (column 3 lines 31-36).

As to claim 4, Lortz et al. disclose a system wherein the engagement surface of the first body **14,16** is non-planar (Figure 2).

As to claim 5, Lortz et al. disclose a system wherein the engagement surface **14,14** surrounds the indenter body **17** (Figure 1).

As to claim 6, Lortz et al. disclose a system wherein the indenter body surrounds (extends beyond the upper and lower surfaces of) the engagement surface (Figure 1).

As to claim 7, Lortz et al. disclose a system wherein the indenter body **17** is a gear (threaded surface of bolt **17** defines a gear surface for engaging first body **14,16**).

As to claim 8, Lortz et al. system wherein the engagement mechanism comprises a linear motor (inherently, the assembly of electric heater **21** and actuation device **21** comprises a linear motor).

As to claim 9, Lortz et al. disclose a system wherein the engagement mechanism **20,21** comprises a clamping apparatus for clamping the first and second bodies together (Figures 1, 2, 4 and 5).

As to claim 10, Lortz et al. disclose a method for engaging and disengaging two bodies, the method comprising the steps of:

providing a first body **14,16** comprising an engagement surface, the engagement surface comprising a pseudo-elastic material, the pseudo-elastic material being at an operating temperature, the operating temperature being above the martensite-austenite transition temperature for the pseudo-elastic material, the pseudo-elastic material being capable of conversion between an austenite state and a martensite state by application of stress to the first body at the engagement surface, the application of stress to the engagement surface thereby converting the first body from an unloaded body to a loaded body wherein the engagement surface of the unloaded body has an unstressed shape and the engagement surface of the loaded body has a stressed shape wherein the stressed shape is different from the unstressed shape;

providing a second body **17** comprising an indenter surface for contacting the engagement surface of the first body, the indenter surface being formed by one or more teeth that extend from the second body for engagement with the first body, the second body comprising a material that is harder than the pseudo-elastic material in the martensite state;

providing an engagement mechanism **20,21** for contacting the indenter surface with the engagement surface to apply sufficient stress to the engagement surface to convert the engagement surface from the unstressed shape to the stressed shape wherein the stressed shape conforms to the shape of the indenter teeth; and

removing the indenter surface from contact with the engagement surface to thereby provide return of the engagement surface to the unstressed shape (Figures 1-5, column 4 lines 17-52).

As to claim 11, Lortz et al. disclose a method that includes the additional steps of:

moving the first and second bodies relative to each other after the step of removing the indenter surface **17** from contact with the engagement surface **14,16** to thereby provide repositioned first and second bodies; and

contacting the indenter surface with the engagement surface of the repositioned first and second bodies to apply sufficient stress to the engagement surface to convert the engagement surface of the repositioned bodies from the unstressed shape to the stressed shape wherein the stressed shape conforms to the shape of the indenter teeth (column 4 lines 17-52).

As to claim 12, Lortz et al. disclose a method wherein the operating temperature is within 40°C above the martensite-austenite transition temperature (column 3 lines 31-36).

As to claim 13, Lortz et al. disclose a method wherein the operating temperature is between room temperature and 300°C (column 3 lines 31-36).

As to claim 14, Lortz et al. disclose a method wherein the engagement surface of the first body **14,16** is non-planar (Figure 2).

As to claim 15, Lortz et al. disclose a method wherein the engagement surface **14,14** surrounds the indenter body **17** (Figure 1).

As to claim 16, Lortz et al. disclose a method wherein the indenter body **17** surrounds (extends beyond the upper and lower surfaces of) the engagement surface **14,16** (Figure 1).

As to claim 17, Lortz et al. disclose a system wherein the indenter body **17** is a gear (threaded surface of bolt **17** defines a gear surface for engaging first body **14,16**).

As to claim 18, Lortz et al. method wherein the engagement mechanism comprises a linear motor (inherently, the assembly of electric heater **21** and actuation device **21** comprises a linear motor).

As to claim 20, Lortz et al. disclose a method wherein the engagement mechanism **20,21** comprises a clamping apparatus for clamping the first and second bodies together (Figures 1-5).

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure. The following patents show the state of the art with respect to shape memory engagement systems:

Hoffman et al. (US 5,134,812) and Sanders et al. (US 5,586,983) are cited for pertaining to systems comprising a first body made of a pseudo-elastic shape memory material comprising an engagement surface, and a second body contacting the engagement surface.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Ferguson whose telephone number is (571)272-7081. The examiner can normally be reached on M-F (8:00-5:00).



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached on (571)272-7087. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
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